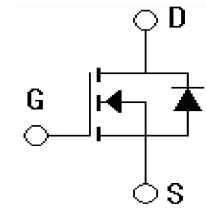
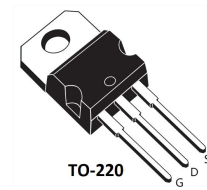


Features

- $V_{DSS}=85V, I_D=210A$
 $R_{DS(on)} < 4.95m\Omega @ V_{GS}=10V$
- High density cell design for ultra low $R_{DS(on)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability



Applications

- Automotive applications
- Hard switched and high frequency circuits
- UPS

Absolute Ratings ($T_C=25^\circ C$)

Parameter	Symbol		Value	Unit
Drain-Source Voltage	V _{DSS}		85	V
Gate-Source Voltage	V _{GSM}		±30	V
Gate-Source Voltage	V _{GSS}		±20	V
Drain Current -continuous	I _D	T _C =25℃	210	A
		T _C =100℃	148	A
Drain Current - pulse(note 1)	I _{DM}		850	A
Single Pulsed Avalanche Energy (note 3)	E _{AS}		1664.1	mJ
Power Dissipation	P _D	T _C =25℃	250	W
		T _C =100℃	100	W
Peak Diode Recovery dv/dt (Note 4)	dv/dt		5	V/ns
Operating and Storage Temperature Range	T _J ,T _{STG}		-55~+150	℃
Maximum Lead Temperature for Soldering Purposes	T _L		300	℃

Electrical Characteristics(T_{CASE}=25°C unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Type	Max	Unit
Off-Characteristics						
Drain-Source Voltage	BV _{DSS}	I _D =250uA,V _{GS} =0V	85	-	-	V
Drain cut-off current	I _{DSS}	V _{DS} =85V,V _{GS} =0V T _j =25°C	-	-	1	μA
Gate-body leakage current,forward	I _{GSSF}	V _{DS} =0V,V _{GS} =20V	-	-	200	nA
Gate-body leakage current,reverse	I _{GSSR}	V _{DS} =0V,V _{GS} =-20V	-	-	-200	nA
On-Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250uA	2.0	3.2	4.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V,I _D =40A (note 2)	-	4.1	4.95	mΩ
Forward Transconductance	g _{fs}	V _{DS} =10V , I _D =20A	35	-	-	S
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	7600	-	pF
Output capacitance	C _{oss}		-	720	-	pF
Reverse transfer capacitance	C _{rss}		-	346	-	pF
Switching Characteristics						
Turn-On delay time	td(on)	V _{DD} =40V,I _D =40A, R _G =1.2Ω, V _{GS} =10V (note 2)	-	23	-	ns
Turn-On rise time	tr		-	124	-	ns
Turn-Off delay time	td(off)		-	84	-	ns
Turn-Off Fall time	tf		-	78	-	ns
Total Gate Charge	Q _g	V _{DS} =40V,I _D =40A, V _{GS} =10V(note 2)	-	140	-	nC
Gate-Source charge	Q _{gs}		-	40	-	nC
Gate-Drain charge	Q _{gd}		-	57	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =40A	-	-	1.2	V
Reverse recovery time	t _{rr}	V _{GS} =0V,I _F =40A dI _F /dt=500A/us(note 2)	-	110	-	ns
Reverse recovery charge	Q _{rr}		-	300	-	nC
Forward Turn-On Time	t _{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Thermal Characteristic

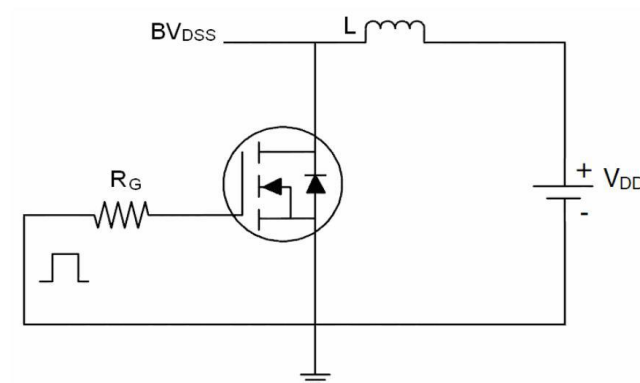
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case,Max	$R_{\theta JC}$	0.5	$^{\circ}\text{C}/\text{W}$
Thermal Resistance ,Junction-to-ambient,Max	$R_{\theta JA}$	40	$^{\circ}\text{C}/\text{W}$

Notes:

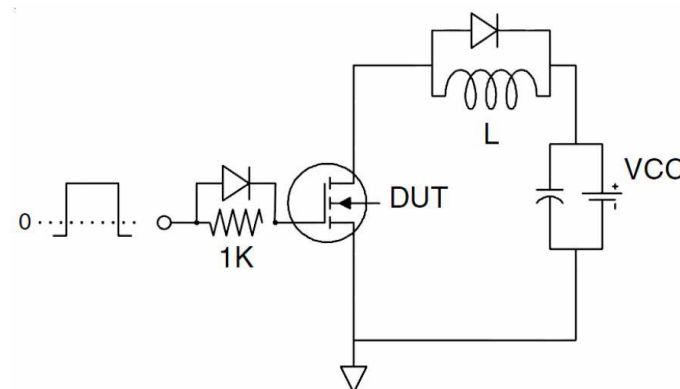
1. Surface Mounted on FR4 Board, $t \leq 10$ sec.
2. Pulse Test: Pulse Width $\leq 400\mu\text{s}$, Duty Cycle $\leq 2\%$.
3. E_{AS} condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=42.5\text{V}$, $V_G=10\text{V}$, $L=0.1\text{mH}$, $I_{AS}=129\text{A}$, $R_g=25\Omega$
4. $I_{SD} \leq 210\text{A}$, $di/dt \leq 260\text{A}/\mu\text{s}$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^{\circ}\text{C}$
5. Essentially independent of operating temperature

Test Circuit

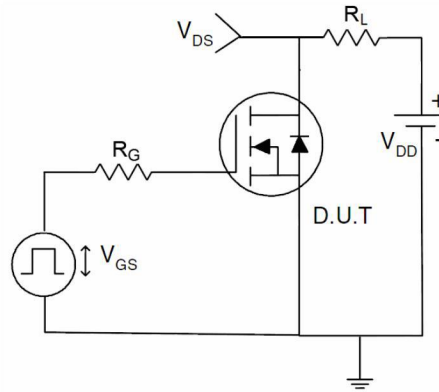
1) E_{AS} test Circuit



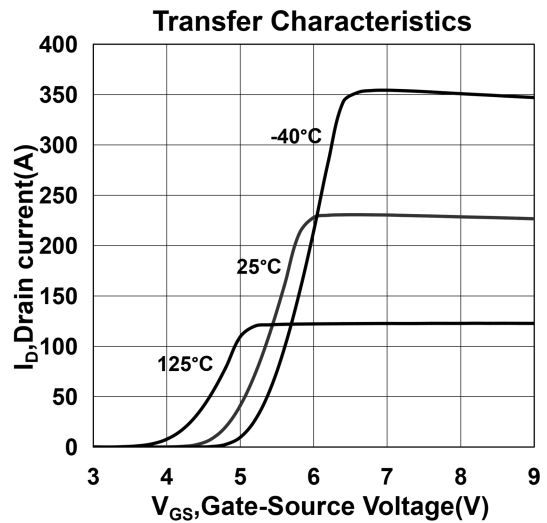
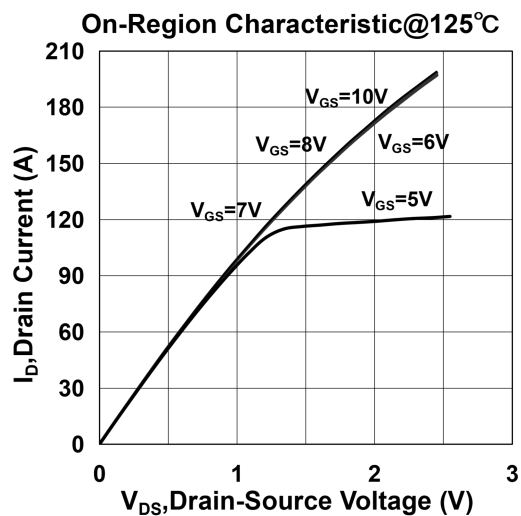
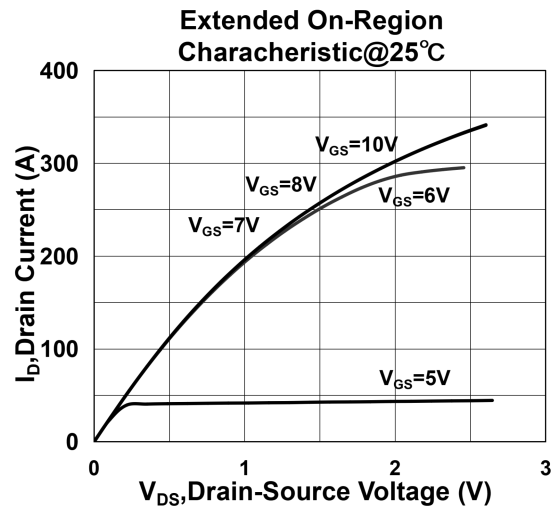
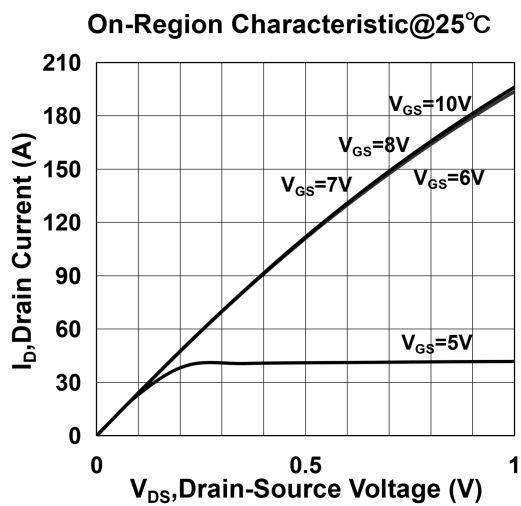
2) Gate charge test Circuit

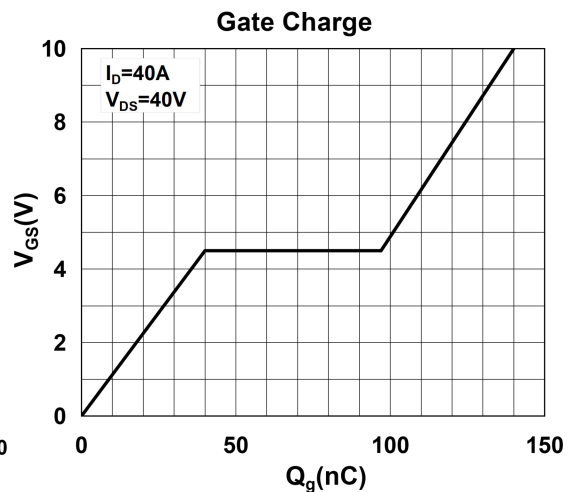
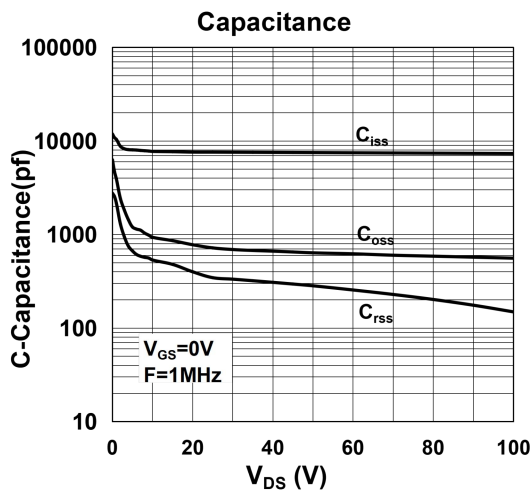
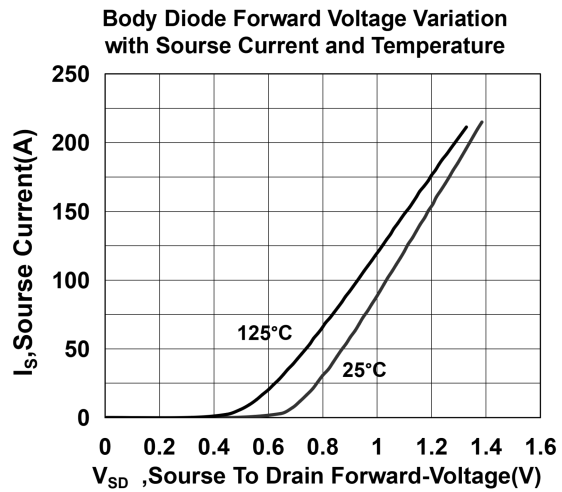
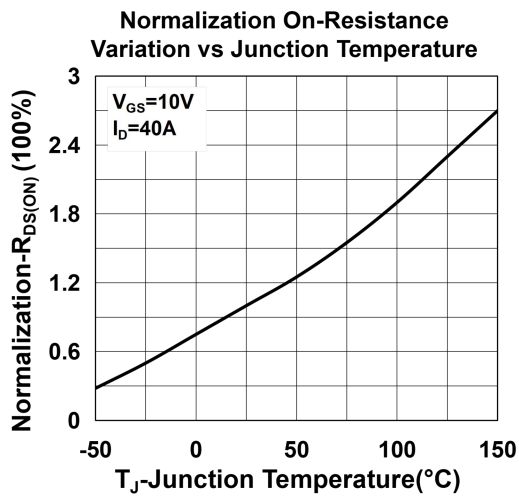
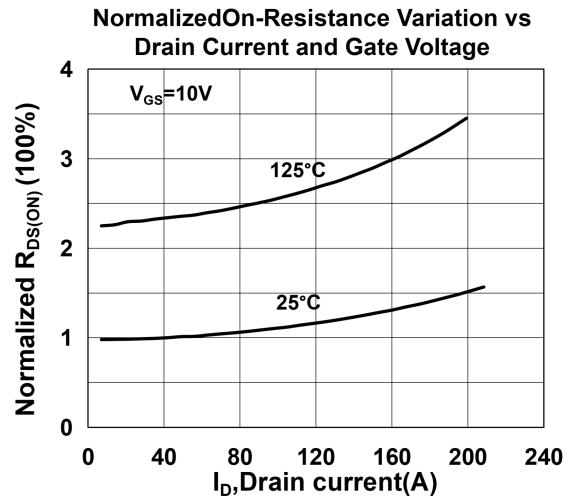
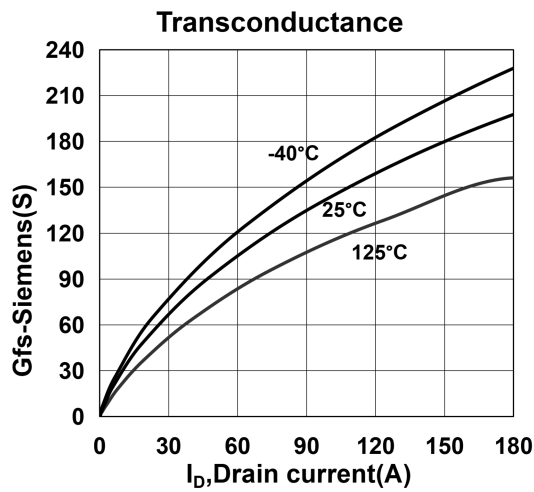


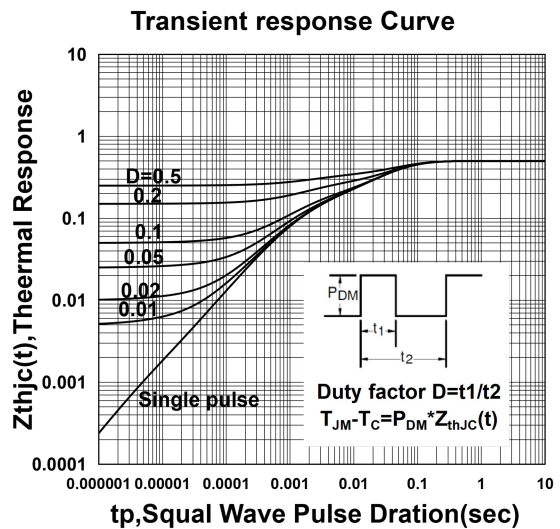
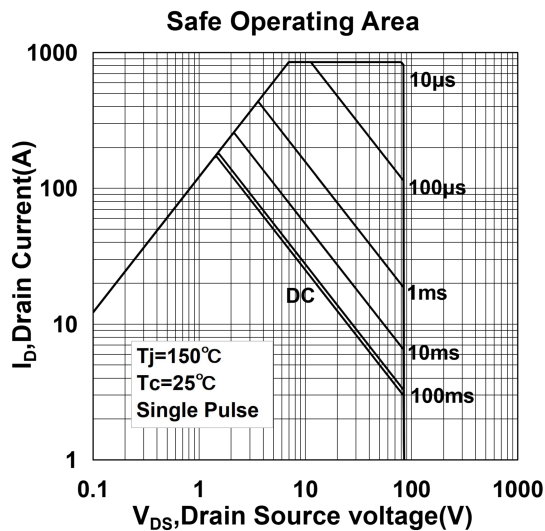
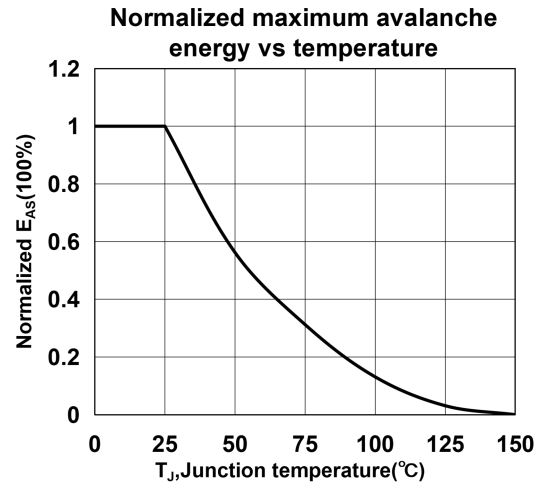
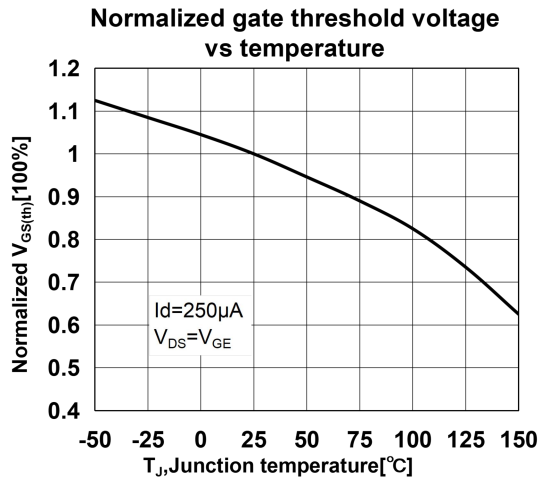
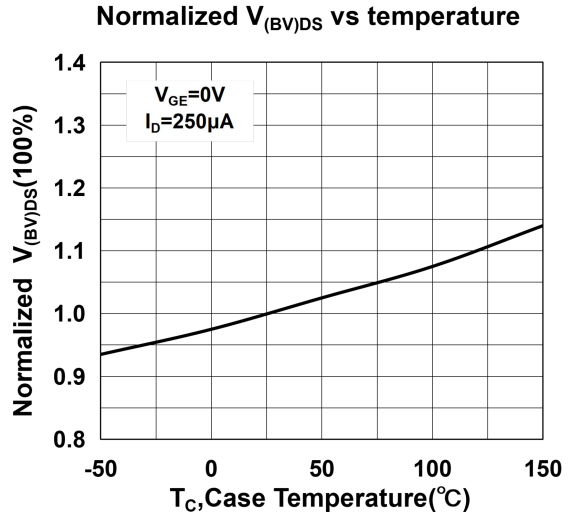
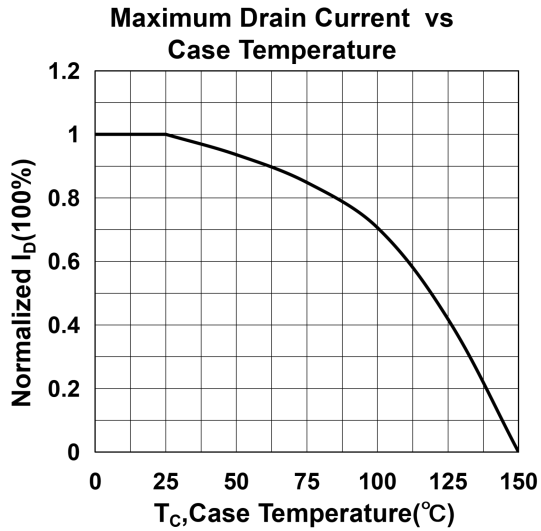
3) Switch Time Test Circuit



Typical Electrical and Thermal Characteristics (Curves)







Package Mechanical DATA

